Recent advances in rickettsial diseases (ESCMID European Study Group on *Bartonella, Coxiella, Ehrlichia* and *Rickettsia*)

S177 New *Bartonella* Infections

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Bartonella are small gram negative bacteria which have been isolated from humans and mammals. Human infections due to Bartonella species are being increasingly reported, and are now considered 'emerging' diseases. *Bartonella* (formerly *Rochalimaea*) quintana, historically associated with trench fever, is now being re-encountered, especially among the homeless and alcoholics, manifesting as endocarditis, trench fever, mediastitial lymph node enlargements and (in AIDS patients) bacillary angiomatosis. *B. henselae* is prevalent in domestic cats and several genotypes and serotypes exist. It causes cat scratch disease, bacillary angiomatosis and hepatic peliosis. *B. elizabethae* has been isolated from one case of endocarditis.

Bartonella species have been shown to cause 3% of endocarditis in three series. Other *Bartonella* species have been isolated from mammals (dogs, cats, rodents) but their role in human disease is currently unknown.

S178 The Emergence of Human Granulocytic Ehrlichiosis (HGE), an Old and New World Tick-Borne Anthropozoonosis

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HGE was first recognized in Wisconsin and Minnesota in 1990. Since then over 200 cases have been identified. Most patients present with an undifferentiated febrile illness with fever, malaise, myalgia, and headache often accompanied by leukopenia, thrombocytopenia, and elevated serum hepatic transaminase activities. Seroepidemiologic studies indicate that most infections are mild. Symptomatic infection responds well to doxycycline. Up to 7% of patients require intensive care and at least 4 have died. Serologic evidence of infection in Europe is now well established, and at least one symptomatic infection in Europe has been documented. The causative agent is genetically, antigenically, and biologically closely related to the veterinary granulocytic *Ehrlichia* species, *E. phagocytophila* and *E. equi*. These obligate intracellular bacteria are transmitted by *Ixodes persulcatus*-complex ticks. The natural reservoirs in the eastern United States are small mammals, especially white-footed mice, *Peromyscus leucopus*. The role of deer as reservoirs is not currently known. The distribution of the agent, the exact spectrum of disease, the clinical sequelae of co-transmitted infectious agents, the pathogenesis, and the mechanisms of host defense defects are unknown, but merit serious world-wide investigation.

S179 New and Classical Rickettsiae in Europe and the Former USSR

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Until recently only five species of spotted fever group (SFG) rickettsiae, *Rickettsia conorii, R. sibirica, R. akari, R. slovaca* and *R. helvetica*, were known from specific foci in Western Europe to the Primorye region of Russia. *R. typhi*, the agent of murine typhus is found along the costar areas while *R. prowazekii* causes sporadic cases of recrudescent typhus. In the last two decades an unexplained increase of SFG disease outbreaks has enhanced interest in these etiological entities and their agents. The introduction of new tools combining molecular-biological protein and genetic approaches with classical microbiological and serological techniques has permitted more accurate diagnosis of rickettsial diseases and identification of agents. Recent studies have resulted in expanding the known areas where classical SFG rickettsiae circulate; identification of two novel species and four new rickettsia biotypes in old foci or in newly discovered endemic areas; description of antigenic and genetic heterogeneity of circulating *R. conorii;* and identification of new species of Ixodid ticks harboring SFG rickettsiae. These findings raised a number of questions concerning the epidemiology of rickettsial diseases. The phylogenetic information obtained from the data has generated new concepts about the taxonomy and evolution of these rickettsiae and their relationship to their acarian vectors.

S180 *Coxiella burnetti:* Recent Advances

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Coxiella burnetii belongs to obligate intracellular bacteria. Unlike other rickettsiae, *C. Burnetii* is thermophilic (resistant to thermal, physical and chemical shock), acidophilic (propagates in the harsh environment of the phagolysosomes of eukaryotic cells), undergoes phase variation (the change of properties upon passaging in different substrates) and sporogenic differentiation, and is transmitted to humans usually by the inhalation of contaminated aerosols. Though *C. burnetii* strains associated with acute or chronic form of human disease may differ in their plasmid content and size or lipopolysaccharide structure, for developing the chronic form of Q fever, host factors rather than properties of the agent are responsible. Molecular biology approach and genetic studies can result not only in better understanding of the agent and its pathogenic potential, but also in improvement of Q fever diagnosis and immunoprophylaxis.

Antibiotics in the hospital setting: Surveillance, resistance, spectra and agent selection

S181 Evolving hospital epidemiology and antiinfective considerations

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Objectives: To consider trends in hospital epidemiology and to evaluate the impact on antimicrobial considerations.

Methods: The emergence of bacterial strains which are resistant to several compounds causes concern about their use in certain circumstances. Resistance in Gram-negative bacteria is principally associated with the production of hydrolysing enzymes. Resistance in Gram-positive bacteria, such as pneumococci and viridans streptococci, is due to alterations in the PBP's. A new group of broad-spectrum parenteral cephalosporins, so-called "fourth-generation" cephalosporins, have been developed. This new class of 7-methoxyimino cephalosporins, which are zwitterions, include cefepime, cefpirome, cefclidin, etc. The activity of various compounds, including cefepime against more than 2000 Gram-negative and Gram-positive blood isolates was evaluated in Belgian hospitals.

Results: Cefepime showed comparable activity to cefotaxime and ceftriaxone against Gram-positive isolates, superior activity to cef-